Aug. 16, 1932. M. O. JENNINGS 1,871,998

COATING MACHINE

Filed Aug. 26, 1930

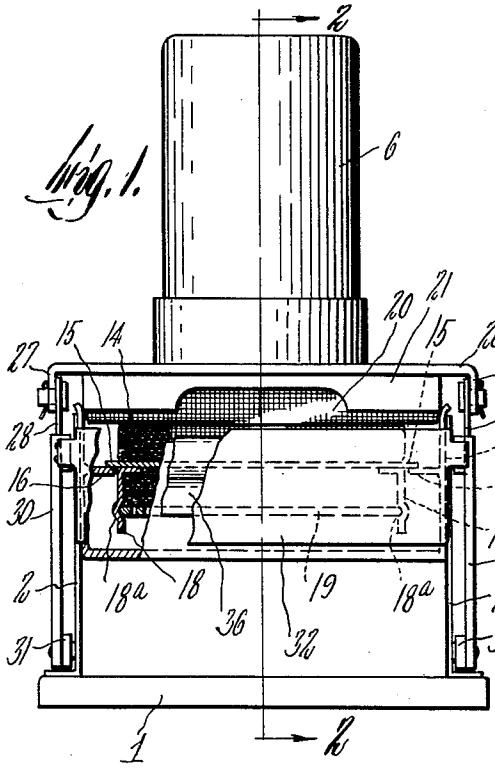


Fig. 1.

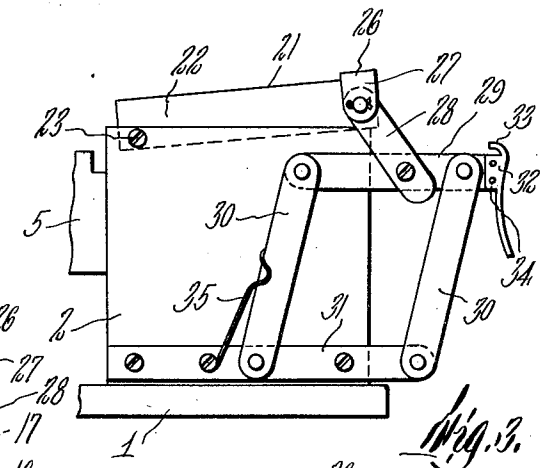


Fig. 3.

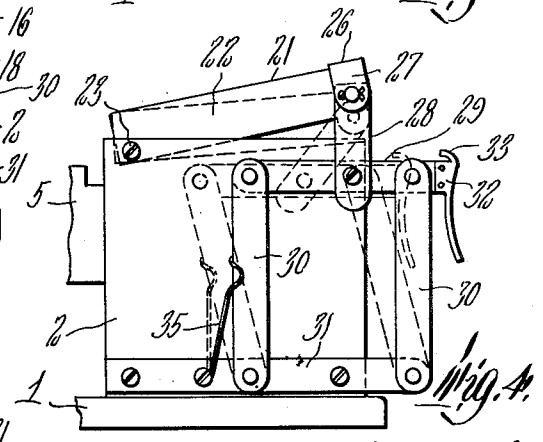


Fig. 4.

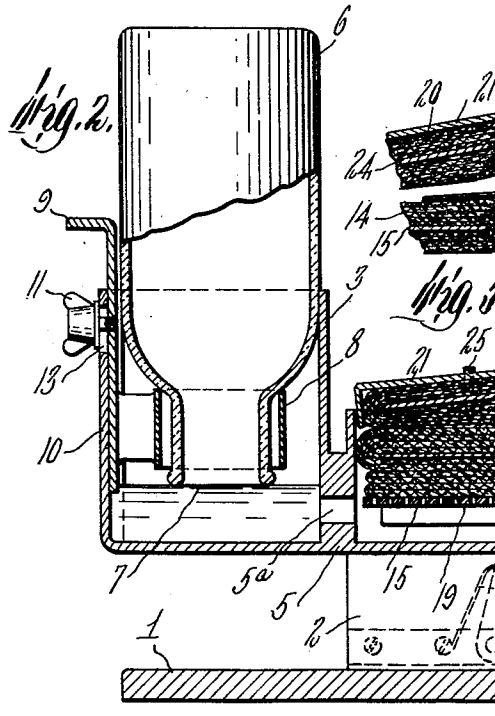


Fig. 2.

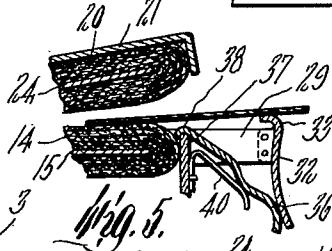


Fig. 5.

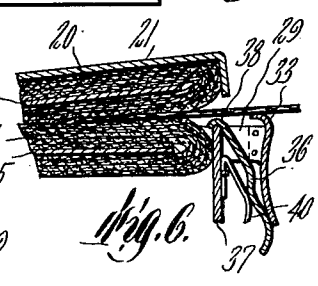


Fig. 6.

Inventor:
Melvin O. Jennings.
By Wright Brown Quinby & May
Attys.

Patented Aug. 16, 1932 1,871,998

UNITED STATES PATENT OFFICE

MELVIN O. JENNINGS, OF LEXINGTON, MASSACHUSETTS, ASSIGNOR TO BECKWITH MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

COATING MACHINE

Application filed August 26, 1930. Serial No. 477,933.

This invention relates to a machine for coating blanks of sheet material with a liquid. Its object is to provide a compact machine of sturdy construction which may be used by an unskilled operator to apply the liquid to both faces of the blanks. While not restricted thereto, such a machine is useful, for example, in applying shellac, latex, or other liquid waterproofing material to both faces of a box toe blank, for when such a coated blank is dried, it presents a water-resistant surface which resists deterioration under the action of moisture after it has been incorporated into a shoe upper. The machine of the present invention is designed to feed the liquid as it is needed to a pair of pads of absorbent material which are normally in superposed contactual relation and which are associated with mechanism permitting their separation and their bringing together so as to permit the introduction of a blank to be coated and its withdrawal. The machine is constructed to hold a container for the liquid in an inverted position and to permit its contents to form a pool from which liquid is received directly only by one of the pads, but is carried by capillary action to the other pad, the mouth of the container being kept below the surface of the pool so that the liquid will be discharged from the container only as it is removed from the pool by the pads.

With these and other objects and features in view, the machine of the present invention will be described hereinafter in greater detail in conjunction with the accompanying drawing, wherein

Figure 1 represents a front view of a coating machine embodying the present invention, certain parts being removed for the purpose of showing its interior construction.

Figure 2 represents a section on the line 2—2 of Figure 1.

Figure 3 is a side view of the front portion of the machine, with the pads in closed position.

Figure 4 is a similar view, but with the pads in separated position for the reception of a blank therebetween.

Figure 5 is a sectional detail illustrating the manner in which a blank is fed between the pads.

Figure 6 is a similar view, but showing the blank in position between the pads.

Referring first to Figure 2 of the drawing, 1 indicates a base on which the machine may be mounted and to which may be secured a pair of spaced plates 2 forming the supporting walls of the machine. Within these walls is received the machine, which includes a rear receptacle 3 and a front receptacle 4 between which there is communication through a channel 5*a* formed in a partition 5 between the two receptacles. The rear receptacle serves to hold a pool of liquid coating material which may be conveniently supplied from a bottle 6 shown in an inverted position in the rear receptacle with its mouth 7 slightly below the surface of the pool. The bottle is supported in this position by a ring member 8, which, as shown, forms part of a bracket 9 secured to the rear wall 10 of the receptacle 3. Preferably, this bracket is vertically adjustable to permit the bottle to be raised or lowered, and thus to raise or lower the level of the pool in the receptacle 3. This adjustment may be realized as by fixing the bracket 9 to the rear wall 10 by a wing screw 11 passing through a longitudinal slot 13 formed in the rear wall.

The liquid coating material flows through the channel 5*a* into the receptacle 4, wherein it contacts with a thick pad of absorbent material 14. This pad may be constructed and supported within the front compartment in any suitable way. For instance, it may be formed by winding a fabric, preferably of coarse weave, about a horizontal plate 15, which may be supported on shelves 16 projecting inwardly from the side walls 17 of the front compartment. Preferably, the plate 15 carries a pair of legs 18, which are recessed or grooved as at 18*a* to receive a perforated partition 19, on which a plurality of folds of the fabric may be supported after it has been wound to the desired thickness on the plate 15. The perforations permit the liquid coating material to pass therethrough to the fabric, from the lower layers of which it is carried by capillary action to the upper layers,

since, as shown, the level of liquid in the pool is preferably maintained only slightly above that of the partition 19. A second pad 20 of absorbent material is normally maintained in contact with the pad 14, as best shown in Figure 2. It may be received within a lid 21 the side walls 22 of which are hingedly secured at their lower rear corners 23 to the supporting walls 2 of the machine. It may be formed by winding a fabric, preferably of loose weave, about a metal plate 24 to the desired thickness, that is, until it fits snugly within the lid and projects out of the lid sufficiently to bear against the underlying pad 14. After the pad 20 has been inserted within the lid 21, it may be fixed in place, as by screws 25 passing through the lid into the upper convolutions of layers of the fabric.

In the coating of box toe blanks, it is sometimes desirable that only the front portion, say, two-thirds, more or less, be coated by the waterproofing material, as this is the portion which is most liable to suffer injury or deformation through the action of moisture and usage. The machine of the present invention includes mechanism by which this result may be accomplished with only two simple manual movements by the operator, namely, the insertion of the blank between the pads and its withdrawal. To this end, the front end of the lid 22 carries fixed thereto a straddle piece 26, to each of the vertical legs 27 of which are pivotally secured the upper ends of rockers 28. The lower ends of these rockers are pivotally secured to the movable horizontal arms 29 of a pair of four-bar linkages, one on each side of the machine. Each of the arms 29 is horizontally movable by virtue of being pivotally secured to the upper ends of a pair of spaced parallel cranks 30. The lower ends of the cranks are pivotally secured to a fixed horizontal arm 31, which may be fastened as by screws to the supporting walls 2. The arms 29 and 31 of each linkage extend beyond the front of the compartment 4, and the upper horizontal arms 29 extend sufficiently beyond the front cranks 30 so that a push apron 32 may be affixed between the arms 29 and in front of the cranks 30. The apron 32 may be made as of sheet metal, so that it may be bent inwardly at its upper edge 33, and may be provided with inwardly bent tabs 34 at its sides, by which it may be fixed as by screws to the ends of the arms 29. The pivotal connection between the rockers 28 and the horizontal arms 29 is made between the cranks 30, so that with the arm 28 normally inclined to the left or rearwardly of the machine, at which time the upper pad is in contact with the lower pad, and with the cranks 30 slightly inclined to the right or front of the machine, the pushing of the apron 32 to the rear of the machine, as shown in Figure 2, results in the separation of the pads by the upward tilting of the lid 22. The continued pushing of the apron 32 rearwardly to the position shown in dotted outline in Figure 4 results in a downward tilting of the lid to its closed position, at which time the arms 28 are at an angle of inclination to the right or front of the machine equal to that normally assumed thereby to the left or rear of the machine. In order that the pads and push apron 32 be restored automatically to their normal position, a wire spring 35 is shown fixed to the arm 31 and engaging the rear vertical leg 30 so as to keep it normally in the position shown in Figure 3. In other words, the pushing of the apron 32 to the rear of the machine results in the tensioning of the spring 35 sufficiently so that it is restored to its normal position when pushing pressure on the apron 32 is released.

In operating the machine, the operator grasps the blank to be coated between the thumb and forefinger, and with the remaining fingers pushes the apron 32 to separate the pads and then to close them on the blank, which becomes coated, whereupon the operator, who still is grasping the blank at its rear marginal portion, withdraws it as the push apron 32 is permitted to recede to its normal position and to open and close successively during the recession. In order to guide the blank as it is being inserted between the pads, a guiding support or shelf 36 may be provided between the push apron 32 and the nip of the pads. This shelf may be hingedly secured to the front wall 37 of the machine, as by forming hook elements 38 at the rear marginal portion of the support and engaging them in recesses formed by striking out curved portions 39 from the front wall 37, the hook element 38 being engaged in the wall with the curved portions serving to prevent their being disengaged. The shelf is preferably formed with a slight downward curvature toward the front of the machine so as to be tilted downwardly when the push apron contacts therewith in its movement toward the rear of the machine. When a blank begins its forward movement into the nip of the pads, it is supported at its front marginal portion by the shelf 36, and as its forward movement continues, it is guided in between the pads, as shown in Figure 5, the shelf 36 being progressively tilted downwardly against the front wall of the machine, so that it is quite close thereto, as shown in Figure 6, when the blank has been pushed to its limit in between the pads. In order to restore the shelf 36 to its normal, slightly inclined position, as shown in Figure 2, a leaf spring 40 is shown secured to the front wall 37 and supporting the shelf. With the downward tilting of the shelf, this spring is compressed or tensioned, as shown in Figures 5 and 6, so that with the release of pressure on the push apron 32 and the recession of the push apron.

the shelf 36 moves upwardly to its normal position.

The machine hereinbefore described is particularly adapted for the application of liquid coating materials which tend to set or harden when exposed to the atmosphere, since when the machine is not being used the atmosphere does not get to the coating material to any serious extent. In fact, not only is the supply of coating material out of direct contact with the atmosphere, but the pads are enclosed except for their contacting faces, which, being in close contact with each other, sufficiently prevent the access of air thereto so that the coating material on these faces does not harden even when the machine is left idle for a considerable period of time.

An embodiment of this invention having been described, it should be obvious to those skilled in the art that various changes or modifications might be made therein without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. A machine of the class described, comprising a pair of absorbent pads arranged in superposed contactual relation, a receptacle for holding liquid in which the lower pad is partly submersed, and means for sequentially separating said pads and for bringing them together by manual movement of said means in a single direction.

2. A machine of the class described, comprising a pair of absorbent pads arranged in superposed contactual relation, means for sequentially separating said pads and for bringing them together by manual movement of said means in a single direction, a receptacle for holding liquid in which the lower pad is partly submersed, a second receptacle for containing a pool of said liquid in communication with said first-mentioned receptacle, and an inverted container received in said second receptacle with its mouth below the surface of said pool.

3. A machine of the class described, comprising a pair of absorbent pads arranged in superposed contactual relation, means for sequentially separating said pads and for bringing them together by manual movement of said means in a single direction, a receptacle for holding liquid in which the lower pad is partly submersed, a second receptacle for containing a pool of said liquid in communication with said first-mentioned receptacle, an inverted container received in said second receptacle with its mouth below the surface of said pool, and means for vertically adjusting the container to vary the level of the pool in said second receptacle.

4. A machine of the class described, comprising a pair of absorbent pads arranged in superposed contactual relation, a receptacle for holding liquid in which the lower pad is partly submersed, a lid in which said upper pad is received, and means for sequentially raising said lid and for lowering it by manual movement of said means in a single direction, whereby a blank may be introduced between said pad and coated on both faces with said liquid in a single operation.

5. A machine of the class described, comprising a pair of absorbent pads in superposed contactual relation, a receptacle for holding liquid in which the lower pad is partly submersed, a lid for receiving the upper pad hingedly secured at one end to said receptacle, a rocker arm pivotally secured near the other end of said lid, a four-bar linkage including a movable arm and a pair of cranks to the movable arm of which said rocker arm is pivotally secured between said cranks, said rocker arm being arranged to tilt said lid first upwardly and then downwardly in a single directional movement imparted to said movable arm.

6. A machine of the class described, comprising a pair of absorbent pads arranged in superposed contactual relation, a receptacle for holding liquid in which the lower pad is partly submersed, a lid for receiving said upper pad hingedly secured at one end to said receptacle, a pair of rocker arms pivotally secured to opposite sides of said lid at its other end, and a four-bar linkage on each side of said lid including a movable arm and a pair of cranks to the movable arms of which said rocker arms are pivotally secured between said cranks, said movable arms projecting beyond said lid and being tied together by a push apron and said rocker arms being arranged to tilt said lid first upwardly and then downwardly when said apron is pushed toward said lid.

7. A machine of the class described, comprising a pair of absorbent pads arranged in superposed contactual relation, a receptacle for holding liquid in which the lower pad is partly submersed, a lid for receiving said upper pad hingedly secured at one end to said receptacle, a pair of rocker arms pivotally secured to opposite sides of said lid at its other end, a four-bar linkage on each side of said lid including a movable arm and a pair of cranks to the movable arms of which said rocker arms are pivotally secured between said cranks, said movable arms projecting beyond said lid and being tied together by a push apron and said rocker arms being arranged to tilt said lid first upwardly and then downwardly when said apron is pushed toward said lid, and means for moving said push apron to its normal position away from said lid when pushing pressure is released therefrom.

8. A machine of the class described, comprising a pair of absorbent pads arranged in superposed contactual relation, a receptacle for holding liquid in which the lower pad is

partly submersed, a lid for receiving said upper pad hingedly secured at one end to said receptacle, a pair of rocker arms secured to opposite sides of said lid at its other end, a four-bar linkage on each side of said lid including a movable arm and a pair of cranks to the movable arms of which said rocker arms are pivotally secured between said cranks, said movable arms projecting beyond said lid and being tied together by a push apron and said rocker arms being arranged to tilt said lid first upwardly and then downwardly when said apron is pushed toward said lid, and a support for guiding a blank into the nip of said pads hingedly secured to said receptacle and downwardly tiltable when said apron is pushed toward said lid.

9. A machine of the class described, comprising a pair of absorbent pads arranged in superposed contactual relation, a receptacle for holding liquid in which the lower pad is partly submersed, a lid for receiving said upper pad hingedly secured at one end to said receptacle, a pair of rocker arms secured to opposite sides of said lid at its other end, a four-bar linkage on each side of said lid including a movable arm and a pair of cranks to the movable arms of which said rocker arms are pivotally secured between said cranks, said movable arms projecting beyond said lid and being tied together by a push apron and said rocker arms being arranged to tilt said lid first upwardly and then downwardly when said apron is pushed toward said lid, a support for guiding a blank into the nip of said pads hingedly secured to said receptacle and downwardly tiltable when said apron is pushed toward said lid, means for moving said push apron to its normal position away from said lid when pushing pressure is released therefrom, and means for tilting said guiding support upwardly to its normal position when pushing pressure is released from said apron.

In testimony whereof I have affixed my signature.

MELVIN O. JENNINGS.